Contents of Volume 68

Number 1

Invited Perspectives in Physiological Zoology

Respiration of Amphibian Eggs
ROGER S. SEYMOUR AND DAVID F. BRADFORD 1

Research Papers

Interspecific Comparisons of Capacity for Regulation of Intracellular pH in Mulluscan Muscle . . . . . STEPHEN T. KINSEY AND W. ROSS ELLINGTON 26
Mass Scaling of Standard Metabolism in Ticks: A Valid Case of Low Metabolic Rates in Sit-and-Wait Strategists
JOHN R. B. LIGHTON AND LAURA J. FIELDEN 43
Larval Cardiorespiratory Ontogeny and Allometry in *Xenopus laevis*
KENT ORLANDO AND ALAN W. PINDER 63
Incubation Temperature Affects Body Size and Energy Reserves of Hatchling American Alligators (*Alligator mississippiensis*)
JOHN ALLSTEADT AND JEFFREY W. LANG 76
Intraspecific Variability in the Thermal Dependence of Locomotion, Population Growth, and Mating in the Ciliated Protist *Euplotes vannus*
B. MICHAEL WALTON, MICHAEL A. GATES, ANNE KLOOS, AND JOANNE FISHER 98
Temperature-Dependent Changes in Expression of Thermostable and Thermolabile Isozymes of Cytosolic Malate Dehydrogenase in the Eurythermal Goby Fish *Gillichthys mirabilis* . . . . . JEN JEN LIN AND GEORGE N. SOMERO 114
The Basis for Cold Tolerance in Hatchling Painted Turtles (*Chrysemys picta*)
GARY C. PACKARD AND MARY J. PACKARD 129
Body Weight Cycles and Energy Balance in the Alpine Marmot (*Marmota marmota*) . . . . . GERHARD KÖRTNER AND GERHARD HELDMAIER 149
Saline-Infusion-Induced Increases in Plasma Osmolality Do Not Stimulate Nasal Gland Secretion in the Ostrich (*Struthio camelus*)
DAVID A. GRAY AND CHRISTOPHER R. BROWN 164

Number 2

Research Papers

Neurotensin in the Gut of the Amphibian *Necturus maculosus* and the Effects of Neurotensin on Stomach Motility
SUSANNE HOLMGREN AND ANN-CATHRINE JÖNSSON 177
Metabolic, Ventilatory, and Acid-Base Responses Associated with Specific Dynamic Action in the Toad *Bufo marinus*
TOBIAS WANG, WARREN BURGGREN, AND EDWARD NOBREGA 192
Oxygen Uptake by the Aquatic Eggs of the Australian Frog *Crinia georgiana*
ROGER S. SEYMOUR AND J. DALE ROBERTS 206

Behavioral, Ventilatory, and Metabolic Responses to Severe Hypoxia and Subsequent Recovery of the Hypogean *Niphargus rhenorhodanensis* and the Epigean *Gammarus fossarum* (Crustacea: Amphipoda)
FRÉDÉRIC HERVANT, JACQUES MATHIEU, DANIEL GARIN, AND ALAIN FRÉMINET 223
The Energetics of Australasian Swifts, Frogmouths, and Nightjars
BRIAN K. MCNAB AND FRANK J. BONACCORSO 245
Physiological Responses of Northern Bobwhite (*Colinus virginianus*) to Chronic Water Deprivation
WILLIAM M. GIULIANO, R. SCOTT LUTZ, AND REYNALDO PATIÑO 262
Experimental Evidence for Temperature-Dependent Winter Lipid Storage in the Dark-Eyed Junco (*Junco hyemalis oreganus*) and Song Sparrow (*Melospiza melodia morphna*) . . . . . CHRISTOPHER M. ROGERS 277
Energy Metabolism and Thermoregulation in Juvenile Harbor Seals (*Phoca vitulina*) in Air . . . STEPHEN HANSEN, DAVID M. LAVIGNE, AND STUART INNES 290
Estimation of the Metabolic Rate of the Desert Iguana (*Dipsosaurus dorsalis*) by a Radionuclide Technique
ERIC L. PETERS, SHAWKI A. IBRAHIM, C. RICHARD TRACY, F. WARD WHICKER, AND KENNETH A. NAGY 316
The Blood of Carnivorous Marsupials: Low Hemoglobin Oxygen Affinity
J. F. HALLAM, R. A. B. HOLLAND, AND T. J. DAWSON 342

Number 3

Research Papers

Fermentation in Tropical Marine Herbivorous Fishes
K. D. CLEMENTS AND J. H. CHOAT 355
Recovery from High pH Exposure in the Rainbow Trout: White Muscle Ammonia Storage, Ammonia Washout, and the Restoration of Blood Chemistry
MICHAEL P. WILKIE AND CHRIS M. WOOD 379
Metabolic and Body Temperature Changes during Pregnancy and Lactation in the Naked Mole Rat (*Heterocephalus glaber*)
NICOLE T. URISON AND ROCHELLE B. BUFFENSTEIN 402
Aerobic Performance in Belding's Ground Squirrels (*Spermophilus beldingi*): Variance, Ontogeny, and the Aerobic Capacity Model of Endothermy
MARK A. CHAPPELL AND GWENDOLYN C. BACHMAN 421
Neural Control of Cardiac Outflow through the Sternal Valve in the Lobster *Homarus americanus*
TAKETERU KURAMOTO, JERREL L. WILKENS, AND BRIAN R. MCMAHON 443
Thermal Effects on Feeding Behavior and Net Energy Intake in a Grasshopper Experiencing Large Diurnal Fluctuations in Body Temperature
JON F. HARRISON AND JENNIFER H. FEWELL 453
Nutritional Ecology and Digestive Responses of an Omnivorous-Insectivorous Rodent (*Abrothrix longipilis*) Feeding on Fungus
FRANCISCO BOZINOVIC AND ANDRÉS MUÑOZ-PEDREROS 474

An Experimental and Comparative Study of Dietary Modulation of Intestinal Enzymes in European Starlings (*Sturnus vulgaris*)
CARLOS MARTÍNEZ DEL RIO, KRISTIN E. BRUGGER, JOSÉ L. RIOS, MARIA E. VERGARA, AND MARK WITMER 490
Lack of Proteins of Oviductal Origin in the Egg of a Tropical Anoline Lizard 512
NANCY CORDERO-LÓPEZ AND MAGDA H. MORALES
Modulation of Water and Solute Transport following Food Restriction in the Colons of the Levant Vole (*Microtus guenteri*) and the Mouse (*Mus musculus*) ..... RAID MUALEM AND ITZHAK CHOSHNIAK 524

Number 4

Invited Perspectives in Physiological Zoology

The Evolution of the Vertebrate Pulmonary Surfactant System
CHRISTOPHER B. DANIELS, SANDRA ORGEIG, AND ALLAN W. SMITS 539

Research Papers

Regulation of Enzymes of Carbohydrate Metabolism during Anoxia in the Salt Marsh Bivalve *Geukensia demissus*
ELIZABETH L. RUSSELL AND KENNETH B. STOREY 567
Hemolymph Ecdysone and Electrolytes during the Molting Cycle of Crayfish: A Comparison of Natural Molts with Those Induced by Eyestalk Removal or Multiple Limb Autotomy ..... MICHELE G. WHEATLY AND MARY K. HART 583
Hormonal Alterations and Reproductive Inhibition in Male Fence Lizards (*Sceloporus occidentalis*) Infected with the Malarial Parasite *Plasmodium mexicanum* ..... KENT D. DUNLAP AND JOS. J. SCHALL 608
Oxygen Uptake by Komodo Dragon (*Varanus komodoensis*) Eggs: The Energetics of Prolonged Development in a Reptile
GEOFFREY F. BIRCHARD, TROOPER WALSH, ROGER ROSSCOE, AND CARL L. REIBER 622
Lactate Production in Isolated Swim Bladder Tissue of the European Eel *Anguilla anguilla* ..... BERND PELSTER 634
Foraging Radii and Energetics of Least Auklets (*Aethia pusilla*) Breeding on Three Bering Sea Islands
BRYAN S. OBST, ROBERT W. RUSSELL, GEORGE L. HUNT, JR., ZOE A. EPPLEY, AND NANCY M. HARRISON 647
Muscle Fibers in Rostral and Caudal Myotomes of the Atlantic Cod (*Gadus morbua* L.) Have Different Mechanical Properties
MELISSA L. F. DAVIES, IAN A. JOHNSTON, AND JANWILLEM VAN DE WAL 673
Quantitative Genetics of Locomotor Speed and Endurance in the Lizard *Lacerta vivipara*
GABRIELE SORCI, JOHN G. SWALLOW, THEODORE GARLAND, JR., AND JEAN CLOBERT 698

Technical Comment

Comparability and Reality in the Measurement of Basal Metabolic Rates: A Response to Speakman, McDevitt, and Cole ..... G. J. GALLIVAN 721

Proceedings of the 4th International Congress of Comparative Physiology and Biochemistry

At back of issue

Number 5

Research Papers

Characterization of Chitobiase from *Daphnia magna* and Its Relation to Chitin Flux ..... Patrick J. Espie and John C. Roff 727

Habitat Selection and Thermal Preference in Two Species of Water Scavenger Beetles (Coleoptera: Hydrophilidae) ..... Brent A. Ybarrondo 749

Energy Storage and Pigmentation Polymorphism in *Xiphophorus variatus* (Teleostei: Poeciliidae) ..... Richard Borowsky and Klaus Kallman 772

Turtle (*Chrysemys picta bellii*) Shell Mineral Content Is Altered by Exposure to Prolonged Anoxia .... Stephen J. Warburton and Donald C. Jackson 783

Growth, Metabolism, and Chorioallantoic Vascular Density of Developing Snapping Turtles (*Chelydra serpentina*): Influence of Temperature Geoffrey F. Birchard and Carl L. Reiber 799

Pulmonary Surfactant Lipids in the Faveolar and Saccular Lung Regions of Snakes .... Christopher B. Daniels, Allan W. Smits, and Sandra Orgeig 812

Adrenal and Hematological Responses to Stress in Juvenile Green Turtles (*Chelonia mydas*) with and without Fibropapillomas A. Alonso Aguirre, George H. Balazs, Terry R. Spraker, and Timothy S. Gross 831

Heart Rate and Oxygen Consumption of Exercising Gentoo Penguins R. M. Bevan, A. J. Woakes, P. J. Butler, and J. P. Croxall 855

Salivary Water Loss during Seed Husking in Deer Mice and Great Basin Pocket Mice ..... Stephen B. Vander Wall 878

Flight Energetics of Free-Ranging Red-Footed Boobies (*Sula sula*) Lisa T. Ballance 887

Fasting Biochemistry of Representative Spontaneous and Facultative Hibernators: The White-Tailed Prairie Dog and the Black-Tailed Prairie Dog Henry J. Harlow 915

Number 6

Invited Perspectives in Physiological Zoology

Hibernation versus Daily Torpor in Mammals and Birds: Physiological Variables and Classification of Torpor Patterns Fritz Geiser and Thomas Ruf 935

Research Papers

Testosterone Is Secreted Extragonadally by European Quail Maintained on Short Days ... Tim Boswell, Michael R. Hall, and Arthur R. Goldsmith 967

Seasonal Acclimatization of Lipid Mobilization and Catabolism in House Finches (*Carpodacus mexicanus*) ..... Timothy P. O'Connor 985
Dietary Assimilation and Food Retention Time in the Herbivorous Terrestrial Crab *Gecarcoidea natalis* ..... Peter Greenaway and S. M. Linton 1006
The Effect of Ration Size and Body Size on Specific Dynamic Action in Adélie Penguin Chicks, *Pygoscelis adeliae*
Donald N. Janes and Mark A. Chappell 1029
Growth Rate and Function of Skeletal Muscles in Japanese Quail Selected for Four-Week Body Mass
Russell E. Shea, In-Ho Choi, and Robert E. Ricklefs 1045
A Possible Role for Ubiquitin in the Stress Response of the Teleost Fish Blue Mao Mao (*Scorpis violaceus*)
Stuart N. Ryan, Ned W. Pankhurst, and Rufus M. G. Wells 1077
Kinetics of Calcium Absorption in the Small and Large Intestine of the Frog *Rana pipiens* ..... Douglas R. Robertson 1093
Biochemical Correlates of Calling Activity in Neotropical Frogs
Catherine Robb Bevier 1118
Thermal Conductance in Aquatic Birds in Relation to the Degree of Water Contact, Body Mass, and Body Fat: Energetic Implications of Living in a Strong Cooling Environment
Jan de Vries and Mennobart R. van Eerden 1143
Inter- and Intra-annual Variation in Milk Composition in Antarctic Fur Seals (*Arctocephalus gazella*) ..... John P. Y. Arnould and Ian L. Boyd 1164
Resting Metabolic Rates and Respiratory Quotients of Gray Seals (*Halichoerus grypus*) in Relation to Time of Day and Duration of Food Deprivation
Patrice Boily and David M. Lavigne 1181